Acquisition Support Strategy for the

Anesthesia Machine

(Magellan 2200)

NSN: 6515-01-533-0968

Version 1.0

Manufacturer: Oceanic Medical Products
Model: Model 1
Power: 1500 Watts
Voltage: 100-250 VAC ±10% 50/60 Hz
Package Weight: 100 lbs (45.36 kg)
Package: 5.5 cubic feet
LIN: A62773

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PMO Medical Devices
USAMMA
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Acquisition Strategy

The Magellan is a commercial-off-the-shelf (COTS) anesthesia delivery system. It is compact, robust and flexible, easy to move, and was designed for military field hospitals, general civilian hospitals, and office-based anesthesia and surgery centers of every description. It is pneumatically powered and contains an electronic ventilation monitor that is A/C or battery powered. The Magellan-2200 may be mounted on a tabletop or on a mobile cart. The ventilator is electrical with a NATO battery back up, built-in battery charger and is supplied with a transformer that can be adjusted to virtually any wall voltage. The unit is designed as a simple to operate unit containing all of the modes and necessary components to deliver a basic anesthetic, including a mechanical ventilator and a single agent vaporizer. All of the safety systems required are employed onboard and easy to utilize.

The Magellan is authorized in the Veterinary Equipment Set (VES) (M30340), Anesthesia Ultrasound Augmentation and the VES, 50 Patient Small (M30136). This system is authorized in Veterinary Medicine units. The acquisition strategy is to purchase one each per M30340 and two each per M30136.

The Magellan is provisioned with all the necessary accessories and supplies. The system is purchased through ECAT vendor Oceanic Medical Products, part number MAG2200M1. It has an item cost of $22,805. This item is OPA funded.

The life expectancy for the Magellan is 10 years (TB MED 7). Operating costs[1] are $1,372 per year and maintenance costs are approximately $475 per year; therefore, the life cycle costs are calculated to be approximately $18,470, not including initial purchase costs.

Clinical Application

The Magellan is used by healthcare personnel to anesthetize patients. The mechanical ventilator has a single agent vaporizer and can be used with a variety of facemasks, endotracheal/ tracheostomy tubes and other approved artificial airways that are standard in any operating theater. The Magellan Anesthesia Machine is fully FDA approved. The Magellan 2200 will be used to anesthetize animal casualties during surgical procedures.

Integrated Logistics Support (ILS)

A. Maintenance Planning

1. Purpose: To provide a description of the requirements and tasks to be accomplished for achieving, restoring, or maintaining the operational capability of a system, or equipment. It covers the functions of preventive maintenance checks and services (PMCS) and associated schedule, periodic

[1] Consumable Supplies only

performance verifications and calibrations, and addresses the test, measurement, and diagnostic equipment (TMDE) used to care for the end item. Lastly, it addresses the maintenance levels of operations and those responsibilities of maintenance personnel therein.

2. Responsibilities: Biomedical and support maintenance can be performed by personnel holding the military occupational specialty 68-A, original equipment manufacturer (OEM), or OEM-trained civilian technicians. Reference material to be used by the maintenance personnel includes, but is not limited to, manufacturer's, operator's, and/or service literature.

3. Maintenance Procedures.

    a. Field Support Maintenance: This item has been assigned a maintenance recoverability code (MRC) "O." The system can be repaired and disposed of at the unit level. There are no special tools or procedures indicated that would hinder the unit maintainer from completely repairing the unit. See inspection procedures below, Section 4b.

    b. Sustainment Support Maintenance: The sustainment level repair for this item will be at MEDLOG Company, which includes replacing subassemblies, rebuilding, and providing field support maintenance for medical units that do not have organic maintenance support. Use of medical equipment standby equipment program (MEDSTEP) materiel will be utilized when non-mission capable (NMC) days exceed 30 days or the unit's assets fall below 50 percent availability.

    c. Depot-level Maintenance: Depot-level maintenance for the system will be used when the system requires overhaul, refurbishment or a safety modification.

    d. OEM Level Maintenance: Oceanic Medical Products can provide complete maintenance repair and calibration, if needed.

4. Inspection Procedures:

    a. This item has been assigned a type item code (TIC) "C." This means prior to being issued from an USAMMA Maintenance Operations Division, this item will have a technical inspection to ensure it was received from the vendor according to the contract and that it functions within the guidelines set by the manufacturer and USAMMA.

    b. The system is to be inspected on a scheduled basis in accordance with the published 10/20 PMCS or the manufacturer's literature.

5. Tools and TMDE required for inspection:

    a. Tool kit, Medical Equipment, 5180-00-117-3414
    b. Tool Set, Medical Equipment Maintenance Unit, 5180-01-483-1431
    c. Safety system (Current Leakage), 6625-01-142-8233
    d. Voltmeter, 6625-01-265-6000
    e. VT Plus Gas Flow Analyzer, 6515-01-541-2864
    f. Riken Anesthetic Gas Analyzer, 6630-01-530-7959

6. 10/20 Standards and MAC – See Appendix D

7. MEDSTEP:

    a. MEDSTEP will be maintained at the MEDLOG Company or at one of the USAMMA Maintenance Operation Divisions.

    b. MEDSTEP requirements will be based on one each per five systems in the support area. That number may be subject to validation based on the condition of the equipment and number of units supported.

    c. MEDSTEP requirements will be reevaluated on an annual basis. The support MEDLOG must be in possession of MEDSTEP in order to affect quick turnaround.

8. Repair Parts/Spare Parts Listing: Repair parts were determined using OEM and/or maintenance historical data. Spare parts can be obtained from existing stock or vendors. Spare parts packages will not be included with each system. Recommended spare parts include, but are not limited to:

Item No	Part or Accessory Description	Part or Accessory Number	Basic Issue	Operator[2]	Repairer
1	Microprocessor Board	526700	1	1	1
2	Printer Controller	183093-2	1	1	1
3	Thermal printer	183093-1	0	1	1
4	Keypad	526219	0	1	1
5	LCD Display	525105-2	0	1	1
6	Incubator Board	527720	0	1	1
7	Speaker	526103	0	1	1
8	Power supply	526101	0	1	1
9	Sensor	527154-2	0	1	1
10	Door sensor	527156-1	0	1	1
11	Motor	527146-1	0	1	1
12	Service Manual	510700-2 REV 0800	0	1	1

9. Annual Man-hour Requirements

    a. Field Support

        (1) Repair: 20.0 hours
        (2) PM: 3.4 hours
        (3) Safety: 1.2 hours
        (4) Calibration: 4.0 hours
        (5) TOTAL: 28.6 hours

    b. Sustainment Support: Repair: 8.7 hours

10. Warranty Control Procedures. The Magellan comes with a 1-year manufacturer's warranty. The warranty includes parts and labor. When warranty service is needed, Oceanic Medical Products should be contacted at (913) 874-2000. Their office is located at 8005 Shannon Industrial Park Lane, Atchison, KS 66005.

11. This system is DA 2406 reportable.

B. Training and Training Support

1. Maintainer: No additional training is required above the standard training received by the 68A at the biomedical maintenance course at the DOD Biomedical Equipment Training School.

[2] X = Operator or Repairer can use this part to fix the system

2. Operator: Operator training for this system is part of the clinician's standard training program.

C. Manpower and Personnel

The fielding of the Magellan will have no impact upon manpower or personnel structure. Operator and maintainer actions will be performed by the same soldiers currently performing similar functions. The total number of authorized operators or maintainers will neither increase nor decrease in the manpower/force structure area. The operator, MOS 68T (Animal Care Specialist), will perform operator checks and services. Field level maintenance will be performed by Medical Equipment Repairers, MOS 68A, assigned to the divisional medical companies and combat support hospitals. Sustainment level maintenance will be performed by the MOS 68A or civilian assigned to the Medical Logistics Companies.

D. Supply Support

Specific COTS support equipment and consumable items are required for the operation of the Magellan. These are available through standard supply sources which are predominantly commercial manufacturers, vendors and distributors cataloged in the Medical Supply Information Logistics System (MEDSILS) and available via the DSCP and ECAT system. It is the responsibility of the Services to order these items via established logistics channels within DOD supply system.

E. Support Equipment

This Magellan can be supported with supplies which can be ordered from Oceanic Medical Products via the DSCP and ECAT system (see table and pictures).

Support NSN	Mfg Part #	Support Nomenclature (Long)
01-533-0968	OMP-2200M1	Anesthesia Machine
01-532-9881	O-A100	Air Compressor With Transport Case
01-532-9886	O-A101	Compressor Air
01-532-9887	O-A102	Case Air Compressor
01-533-0980	O-A110	Valve Peep Anesthesia
01-533-1102	O-A103	Water Trap Anesthesia
01-533-1104	O-25.1/S	Sevoflurane Vaporizer Anesthesia
01-533-1169	O-25.1/I	Isoflurane Vaporizer Anesthesia
01-533-1174	O-105A	Oxygen Sensor Replacement
01-533-1177	O-A105	Oxygen Monitor
01-533-1216	O-A109	Bundle (See below)*
01-533-1279	O-A104	Case Anesthesia Machine
01-533-3323	O-A108	Maintenance Kit, Gas
01-542-0324	NA	Upgrade Kit Anesthesia

- The Bundle Contains:

Item Description	Support Nomenclature (Long)	Quantity
Mask-Size 0	12" Silicone Respiration Tubing/ 16mm	1
Mask-Size 1	KAB Absorber (without APL Valve)	1
Mask-Size 3	Head Strap-Latex Free	1
Silicone Face Mask-Size 3	12" Reusable Tubing	3
Silicone Face Mask-Size 4	30mm x 19mm Connector	1
Silicone Face Mask-Size 5	3.0L Silicone Breathing Bag	2
Mask Hook Rings,	Right Angle Elbow (w/female luer lock),	1
72" Silicone Respiration Tubing/16mm	Ported Y-Connector	1
1.0L Silicone Breathing Bag	22mm T-Connector	1

Support items:

Magellan 2200 Anesthesia machine

Magellan 2200 Case

Vaporizer

Air Compressor

Peep Valve

Oxygen Monitor

Air Compressor Case

Water Trap

F. Technical Data

1. Service Manual: Magellan-2200 Model 1 Anesthesia Machine Service Manual, Model 1, Rev July 1, 2004. This is available in PDF or IETM via CD by going to the USAMMA website (http://www.usamma.army.mil/med_equip_lit_cdroms.cfm) and following the instructions or by calling DSN 343-4379 or commercial 301-619-4379.

2. Operator's Manuals: Magellan-2200 Model 1 Anesthesia Machine Operators Manual, Rev July 1, 2004.

G. Computer Resources Support

No computer resources are required.

H. Facilities

There are no unique facilities, shelter, or environmental compliance requirements. Warehouse storage is required prior to deployment to a unit.

I. Packaging, Handling, Storage and Transportation

The Magellan is packaged in a hardened reusable container (NSN 6515-01-533-1279). It will be transported by vehicles organic to using organizations or by other transportation assets within the theater. There are no strategic lift constraints associated with this system. When transported (per MIL STD 1472), the system may be carried by two persons.

All support items are non-deteriorative.

MAGELLAN 2200 CHARACTERISTICS

Storage temperature	NA
Operating temperature	30^{o} F to 160^{o} F -
Relative humidity	40% to 90% relative humidity non-condensing
Dimensions (L x W x H), in	23 x 17 x 23
Weight (lb)	45

J. Design Interface

The Magellan will interface with the electrical distribution system at the using organization.

K. Requisition / Supply

1. The Magellan is a non-stocked centrally procured item. The system will be provided during an initial fielding or sustainment fielding. Or if requested from the unit, procurement will be initiated only after receipt of a requisition.

2. AAC Code = J, which denotes NOT STOCKED - CENTRALLY PROCURED (non-stocked items) - IMM/Service centrally managed but not-stocked item. Procurement will be initiated only after receipt of a requisition.

3. ARC Code = N, which denotes Class VIII items valued at $500 or more that retain their original identity and are not consumed in use and non-maintenance significant medical furniture items valued at $1,000 or more.

4. TIC Code = C, which denotes critical medical equipment requiring technical Inspection.

5. Resupply items for this product are noted in the Supply Support and Support Equipment section.

Appendix A – Market Analysis

N/A

Appendix B – Standardization Efforts

N/A

Appendix C – Testing and Airworthiness

N/A

Appendix D – 10/20 Standards and MAC Chart

Operator's Preventive Maintenance Checks and Services

6515-01-533-0968
Magellan

[B-Before Operation, D-During Operation, A-After Operation, Q-Quarterly, and S-Semiannually]

Item No	Interval	Item to be Inspected and Procedure	Is Not Mission Capable If:
1	B, S	**Magellan** a. Conduct an inventory to ensure that the items listed on the Equipment Parts and Accessories List are on hand. b. Verify backup ventilation equipment is available and functioning. It is recommended that a self-inflating bag/valve/mask device with the ability to provide high concentrations of O2 be immediately available. c. Perform "Start-up" procedures in accordance with operating instructions.	Missing parts or accessories preclude operation of the refrigerator. Analyzer fails to start-up.
2	B,S	Check Oxygen Cylinder Supply Open O2 cylinder and verify at least half full (approx. 1000 psi).	No Oxygen or less than 1000 psi.
3	B,A,S	Close cylinder Check Initial Status of Low Pressure System	Will not hold pressure.
4	B	Close flow control valves and turn vaporizer off. Check fill level and tighten vaporizer filler cap.	Not full.
5	B,A,S	Perform Leak Check of Machine Low Pressure System	.
6	B	Verify that the machine flow control valves are OFF Attach "Suction Bulb" to common gas outlet Squeeze bulb repeatedly until fully collapsed Verify bulb stays fully collapsed for at least 5 seconds	Will not turn off. Bulb does not stay collapsed for 5 sec.
7	B	**Monitors** Check, Calibrate and/or Set Alarm Limits of All Monitors Ventilator and ventilation monitor parameters including Oxygen analyzer Page 18 Physiologic monitor that may include vaporizer agent, capnometer and pulse oximeter Page 15	Alarm Limits do not work.
8	B	Air Compressor Turn on. Adjust air compressor to 50 PSI **Ensure "Equipment Care" is conducted as directed by the manufacturer's literature.**	 Does not turn on. Will not reach 50 PSI

Maintainer's Preventive Maintenance Checks and Services

6515-01-533-0968

Magellan

[B-Before Operation, D-During Operation, A-After Operation, Q-Quarterly, and S-Semiannually]

Item No	Interval	Item to Be Inspected and Procedure	Is Not Mission Capable If:
1	B, S	**Magellan 2200** a. Conduct an inventory to ensure that the items listed on the Equipment Parts and Accessories List are on hand. b. Check the electrical power cord for cuts, fraying, or deterioration. d. Perform "Start-up" procedures in accordance with operating instructions.	Missing parts or accessories preclude operation of the refrigerator. The power cord is cracked or frayed, wires are not covered by the cord insulation, or the damage prevents the Magellan. Fails to start-up
2	B	Changing the Gas Manifold Inlet Filters Page 4	`
3	B	Replacement of Rubber Bellows and Inspection of Exhalation Diaphragm Valve Page 5	
4	B	Mandatory Replacement of Gas Manifold - High Pressure Color-Coded Tubing Page 9	Display fails.
5	B	Calibration Guide: Page 10	
6	B	**TESTING AFTER STORAGE Page 12** Equipment Care **Ensure "Equipment Care" is conducted as directed by the manufacturer's literature.**	

Maintenance Allocation Chart

Anesthesia Machine
6515-01-533-0968
Model 1

FM – Crew or Unit Maintenance, SM – MEDLOG or Depot Maintenance

(1)	(2)	(3)	(4)	(5)	(6)
Group #	Assembly Group	Maintenance Function	Maintenance Level	Tools and TMDE Code	Remarks
00	Magellan	Inspect	FM		
		Service	FM		
		Test	FM	01, 02, 20	
		Safety	FM	20, 29	
01	Temperature Control	Inspect	FM		
		Replace	FM		
02	Reagent Handling System	Inspect	FM		
		Adjust	FM		
		Replace	FM		
03	Optics	Adjust	SM		Laptop, RS232 & serial cable, VOM, sensor/tray And tower Alignment tool
04	Auto Calibration	Test	FM		
05	Scanner Board	Test	SM		RS232 & serial cable, VOM, sensor/tray And tower Alignment too feeler gauge, Pulley / bar code reader alignment tool
06	Incubator Boards	Test	FM	20	VOM
		Replace	FM	01, 02	
07	Bay interface board	Test	FM	01, 02, 20	VOM
		Repair	FM	01, 02, 20	
		Replace	FM	01, 02, 20	

Anesthesia Machine
6515-01-533-0968
Model 1

FM – Crew or Unit Maintenance, SM – MEDLOG or Depot Maintenance

(1)	(2)	(3)	(4)	(5)	(6)
Group #	Assembly Group	Maintenance Function	Maintenance Level	Tools and TMDE Code	Remarks
08	Motors and Sensors	Test	FM	20	RS232 & serial cable, VOM, sensor/tray, And tower Alignment tool and feeler gauge
		Repair	FM	01, 02	
		Replace	FM	01, 02	
09	Internal Computer	Inspect	SM	20	Laptop
		Repair	FM	01, 02	
		Replace	FM	01, 02	
10	Power Supply	Inspect	FM	01, 02,21	VOM
		Service	FM	01, 02	
		Replace	FM	01, 02	
11	Keypad and Display Screen	Inspect	FM		
		Service		01, 02, 04	
12	Internal Printer	Repair	FM	01, 02, 04	
		Test		20	
		Replace		01, 02, 03	
13	Rebuild		SM		

Tools and TMDE Code Listing for Maintenance Allocation Charts

Ref Code	Item / Nomenclature	LIN	NSN	Model
01	Tool Kit, Medical Equipment Maintenance Repairer	W45334	5180-00-611-7923	Individual GSA Item
02	Tool Set, Medical Equipment Maintenance Unit Level	W45197	5180-01-483-1431	Unit Level (alt: Org Maint)
03	Tool Set, Medical Equipment Maintenance Direct Support Level		5180-01-483-2185	Direct Support
04	Tool Set, Medical Equipment and Maintenance General Support Level	T24386	6545-01-482-2907	General Support (alt: Shop Set, Bn Med Maint)
05	Meter X-Ray Calibration Multimeter Radiographic X-ray Calibration & Verification System	CO5856	6525-01-502-0504 6525-01-387-0212 6625-01-312-0894	UNFORS 710-L PMX-III Victoreen
06	Gas Flow Analyzer / Calibrator Gas Flow	C61523	6515-01-491-6615 6695-01-255-2855	VT-Plus RT-200
07	Anesthetic Gas Analyzer	A00098/ Z00334	6630-01-487-6987	Riken 1802D
09	CO2 Analyzer		P/N 19-3325	2820
10	Analyzer NIBP	Z07763	6515-01-449-1423	Cufflink
11	IV Pump Analyzer	J24245	6515-01-449-2331 6515-01-479-2355 6515-01-536-2122	IPT-1 IDA4P/3 Depot Only IDA 4P/1
12	Defibrillator Analyzer TPA Tester Defibrillator	A83433 T02889	6515-01-449-1420 6625-00-433-9063	Impulse 4000 DT2000A
13	Counter, Electronic Digital	C19266	6515-01-271-3012	AN/USM-459A
14	Densitometer, SU150/P	D94348	6525-01-161-1945	07-423 Request deletion
15	Simulator, Medical Function Simulator, Medical Function Calibrator Generator, ECG Simulator, Medical Function 17 April 07	S56720 S56720 C61455 S56720	6625-01-207-8236 6625-01-298-3830 6515-01-049-9449 6515-01-548-3352	217A 215M ECG 100 MPS450 Army Medical Kit
16	Signal Generator	S48323	6625-01-276-9421	SG-1288/G
17	Computer, Laptop	N/A	7010-01-502-5490	Various
18	Foot Candle Meter	M38443	6695-01-303-0294	9-118
19	Thermometer		6625-01-296-4006 6685-01-292-7873	TK 80 Probe Only 51-II Single Channel
20	Multimeter, AN/PSM-45A Multimeter, AN/USM-486	M60449 M23954	6625-01-265-6000 6625-01-145-2430	27/FM 8050A
21	Oscilloscope, Digital Oscilloscope Oscilloscope Medical Oscilloscope 29 Feb 08	P43667 P30693 P33687 P43667	6525-01-448-9577 6625-01-187-7847 6625-01-258-0022 6625-01-560-1673	THS720P (old LIN Z47763 2235L 2430A 199B
22	Radiometer, Ultrasound Therapy		6625-01-504-2654	UW-4

	Wattmeter 5 Nov 2007	R95994	6625-01-504-8680 6625-01-141-7357 6625-01-487-6986	UW-5 UMR 3-C UMR 3-D
24	Simulator, Pulse Oximetry	S57953 Z14528	6515-01-518-4101 6515-01-504-8537 6515-01-449-1422	INDEX 2XLFE INDEX $2M_{FE}$ Cardiosat EF
25	Tachometer, Tachometer, Stroboscopic Tachometer Digital Medical Equipment 17 April 07	T07421	6680-00-243-9977 6680-01-307-8190 6625-01-550-3339	1726 1893A Do not use
26	Test Cassette, X-Ray	C74198	6525-01-039-4019	07-467 Request Deletion
27	Test Set, Electronic	T77263	6625-01-255-0839	HTR2000/Huntron
28	Test Set, Electrosurgical	T90883	6515-01-438-2409 6625-01-042-8213	454A RF302
29	Tester, Current Leakage	T61791	6625-01-142-8233 6625-01-207-8270	232M Do not use 232D
31	Tester, Ventilator	T05633/ Z28075	6515-01-449-1421	Pneuview 360001

Appendix E - Reference

N/A